

4.6 Ambient Nutrient Loading

Ambient loading was calculated from the basin-wide data set for wells located in undeveloped areas. The ambient nutrient loading is calculated to estimate the amount of nutrients that would discharge into Lake Tahoe regardless of anthropogenic sources. These conditions represent the nutrient concentrations as of today in undeveloped and undisturbed areas. The discharge rates which were determined to be the most reasonable estimates of groundwater discharge were used in calculating the ambient nutrient loading. Based on these estimates, the total dissolved nitrogen concentrations that may be entering the lake from natural processes is 1,300 kg/year (2,900 lbs/yr). The estimated ambient total dissolved phosphorus concentration entering the lake is 240 kg/year (530 lbs/yr). Review of the estimates shows that the estimated ambient nitrogen loading from Emerald Bay to Taylor Creek exceeds the total loading calculated. In addition, the estimated ambient phosphorus loading from Stateline exceeds the total phosphorus loading calculated in this subregion. In these cases, the ambient concentrations were set equal to the calculated loading estimate. The revised ambient loading estimates are 1,000 kg/year (2,200 lbs/yr) total dissolved nitrogen and 230 kg/yr (500 lbs/yr) total dissolved phosphorus. Table 4-18 summarizes the loading estimates using the corrected values.

Table 4-18. South Lake Tahoe/Stateline Ambient Nutrient Loading Estimate

Subregion	Groundwater Discharge (m ³ /year)	Ambient Total Dissolved Nitrogen (mg/L)	Ambient Total Dissolved Phosphorus (mg/L)	Ambient Nitrogen Nutrient Loading ^a (kg/year)	Ambient Phosphorus Nutrient Loading ^b (kg/year)
Emerald Bay to Taylor Creek	1.6E+06			150	80
Subregion 1	4.7E+05			130	23
Subregion 2	1.2E+06	0.27	0.049	330	59
Subregion 3	4.9E+04			13	2
Subregion 4	7.2E+05			190	35
Stateline	8.6E+05			230	30
Total				1,000	230

Notes:

1. 1 m³/year = 0.0008 acre-feet/year, 1 kg/yr = 2.2 lb/yr
2. Average nutrient concentrations derived from those included in Section 3.2.
3. All concentrations reported are dissolved.
4. a – When the nitrogen ambient concentration exceeded the total loading, the total loading value was used.
5. b - When the phosphorus ambient concentration exceeded the total loading, the total loading value was used.

4.7 Summary & Conclusions

The South Lake Tahoe/Stateline area has the largest monitoring network in the basin. This provides the best dataset available to calculate nutrient loading to Lake Tahoe. For this